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VALIDITY OF CONTINGENT VALUATION FOR PUBLIC AND PRIVATE GOODS

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Final Report
Cooperative Agreement 28-C2-619

between
University of Massachusetts
and
Rocky Mountain Forest and Range Experiment Station

February 1994

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This final report consists of a manuscript describing the hypotheses, methods, and results of the work performed for the cooperative study (pages 2-42) and an appendix containing the final experimental materials (beginning on page 43).

Acknowledgement

We thank Lori H. Rosenthal, Research Assistant at the UMass Psychology Department, for her efforts in data collection and analysis.

Abstract

A laboratory experiment examined the recommendation that respondents in contingent valuation (CV) surveys be given detailed information about the proposed transaction. Consistent with the view that information about a public or private good can function as a persuasive communication, willingness to pay (WTP) was found to increase with the quality of arguments used to describe the good, especially under conditions of high personal relevance. Under low personal relevance, WTP for a public (but not for a private) good was higher when an altruistic, as opposed to an individualistic, orientation was activated. It is concluded that the nature of the information provided in CV surveys, as well as subtle contextual cues, can seriously bias obtained WTP estimates.

INTRODUCTION

Contingent valuation (CV) has become a popular tool to estimate the dollar value of public goods that are not traded in the market place [see 10, 21, 23 for reviews]. Different elicitation procedures are available [see 21], but in the most direct method respondents are asked to state how much money they would be willing to pay for a certain good in a hypothetical or contingent market. The monetary value of the public good in question is measured by aggregating these willingness-to-pay (WTP) estimates in the relevant population. Although scores of contingent valuation surveys have been conducted in recent years, the validity of the derived measures is often disputed. Some economists [e.g., 11, 25, 27] have expressed serious doubts about the method's ability, under any circumstances, to provide valid measures of economic value. Most critics, however, have upheld the fundamental utility of the method, and have urged a more careful approach to the elicitation of WTP estimates [e.g., 6, 16, 28].

One potentially serious problem faced by the contingent valuation method is that respondents usually have little, if any, prior experience with the public good under consideration, and lacking familiarity with the proposed transaction, they may find it difficult to assign to it a meaningful monetary value. Partly to alleviate this problem, investigators have been exhorted to provide respondents with a detailed and accurate description of the proposed transaction, so that they know what they are being asked to evaluate and can make an informed decision [13, 21, 26].

The study reported in the present article was designed to evaluate some implications of this recommendation. Its intuitive reasonableness notwithstanding, it may be argued that giving respondents detailed information about the public good and about the context relevant for valuation can introduce unintended and unanticipated distortions into the valuation process. Just as expressed

willingness to pay can be considered a measure of attitude or intention [4, 17, 18], providing information about a public (or private) good can be viewed as a persuasive communication likely to change these attitudes and intentions. Even though we may make every effort to produce an accurate and balanced description of the proposed transaction, the information provided will almost inevitably bias the respondents' beliefs and attitudes [see 14].

Persuasive communications provide information that is designed to change the receiver's attitude in the advocated direction. To attain this goal, the message contains a number of major arguments in support of the advocated position and usually some empirical evidence to bolster the arguments [see 3, 15]. Although the descriptions of public goods in contingent valuation (CV) surveys are not explicitly designed to produce attitude change, they often contain a series of arguments likely to do just that. For example, an early CV survey assessed willingness to pay an entrance fee to a recreation area for purposes of preventing environmental degradation [7; see 20, 22 for more recent examples]. Local residents and visitors to the area were informed of plans to construct a large electric generating plant north of Lake Powell. They were told that the plant could have a significant effect on the quality of the environment, that it might be seen for many miles, and that air pollution from the plant could greatly reduce visibility. Furthermore, it was suggested that the amount of money visitors are willing to spend for a recreational experience depends on the quality of the experience they expect. This information may have served to justify the proposed fee, thus in effect presenting respondents with a persuasive communication that was likely to increase their willingness to pay. The recommendation to provide detailed descriptions of the public good to be valued is likely to reinforce this aspect of CV surveys even if care is taken to present a balanced picture.

Persuasive argumentation is inherent in the contingent valuation method due to the hypothetical nature of the transaction that is to be judged. Even an artistic rendering of the proposed changes [e.g., 6, 19] is not free from potential bias because it, too, provides information, albeit in visual form, that tends to be supportive of the changes in question. This feature of the CVM stands in marked contrast to transactions in an actual market where prior exposure to product-relevant information is part and parcel of the market forces and need not be imposed from the outside.

The major aim of the present study was to demonstrate the potential for information bias in the contingent valuation method, a bias that will tend to influence WTP judgments. The direction and amount of change produced by the information provided will depend on several interrelated factors. The following ideas are derived from recent theory and research on the effects of persuasive communication [for reviews, see 12, 14, 24].

The first and most important factor that determines a message's persuasive impact is the quality of the arguments it contains. As a general rule, strong arguments produce more change than weak arguments. The effect of argument quality, however, depends to a large extent on the receiver's processing mode [8, 24]. For strong arguments to produce more change than weak arguments, receivers of the persuasive message must carefully process the information they are given: they must scrutinize the arguments contained in the message, evaluate them, and then base their judgments on these evaluative processes. This is known as the central processing mode, and it requires that receivers of the message be sufficiently motivated and able to attend to the message and process the arguments it contains. Perhaps the most important determinant of motivation to process information contained in a message is the personal relevance of the issue for the receiver. Only when the message addresses an issue of personal relevance is the receiver likely to process

the information carefully. In the absence of sufficient motivation or ability to process the information contained in the message, receivers are said to adopt a peripheral processing mode in which they base their final judgments on relatively superficial cues in the situation that are unrelated to the content of the message. A peripheral cue of potential relevance for CV estimates concerning public goods is the salience of altruistic or individualistic motives. Empirical research [17, 18, 27] has suggested that WTP is related to the moral satisfaction one can derive from making a contribution to a public good. Altruistic as opposed to individualistic motives may therefore be particularly relevant contextual cues in contingent valuation surveys.

HYPOTHESES

To test the potential for information bias in CV surveys, we assessed willingness to pay for a public good as well as attitudes toward the good in question. For comparison purposes, the same measures were also obtained with respect to a private good. Most of the attitudinal judgments were selected for their relevance to Ajzen's [1, 2] theory of planned behavior. According to the theory, the primary antecedent of any behavior, including the behavior of paying money for a public good, is the intention to perform the behavior in question. The intention, in turn, is a joint function of three factors: attitude toward the behavior, which is the degree of positive or negative evaluation associated with performing it; subjective norm, or the perceived social pressure to perform the behavior; and perceived behavioral control, which refers to the perceived ease or difficulty of performing the behavior. With respect to paying for the public and private goods, therefore, we assessed – in addition to WTP – attitudes, subjective norms, perceptions of behavioral control, and behavioral intentions. We formulated the following hypotheses.

1. The quality of the arguments contained in the description of the proposed transaction affects WTP as well as attitudinal judgments. Specifically, relatively strong arguments produce willingness to pay more money, as well as more positive attitudes, than do relatively weak arguments.

2. The effect of argument quality is greater when respondents are motivated by high personal relevance to process the description of the proposed transaction than when they are not so motivated.

3. Under low personal relevance, WTP and attitudinal judgments can be influenced by peripheral cues that are unrelated to the contents of the description. In the case of a public good, it is expected that in comparison to an individualistic orientation, an altruistic orientation increases willingness to pay and raises the favorability of other attitudinal judgments. No effect of individualistic versus altruistic orientation is expected in the case of a private good for which motivations of this kind are largely irrelevant.

PILOT STUDIES

Preliminary work was required to construct descriptions of a private and a public good that contained either strong or weak arguments, and to design a manipulation that would make salient either an altruistic or an individualistic motivational orientation. A total of 136 undergraduate college students at the University of Massachusetts participated in two pilot studies, 56 in the first study and 80 in the second. Approximately two-thirds were female, and most of the participants were in their freshman or sophomore years. They received experimental credits for their participation. The pilot studies explored two alternative procedures for making salient altruistic or individualistic motivational orientations, a sentence unscrambling task and a directed attitude expressions task. The sentence unscrambling task described below was found to have a stronger priming potential and was therefore selected for the main study.

The pilot studies were also used to develop different descriptions of a public and of a private good. The descriptions varied the quality of the arguments provided, as well as the personal relevance of the good in question. The public good selected was construction of a campus movie theater while the private good was a personal noise filter. For each good, the 80 students in the second pilot study were divided equally into the four conditions of high versus low relevance and strong versus weak arguments. After reading a description, the participants answered a series of questions, using 7-point graphic response scales. The intervals on the scales were numbered from 1 to 7, and the respondents were asked to circle the number that best reflected their opinions. Two questions were designed to assess the perceived quality of the arguments contained in the description of a given product. The first, "How strong a case did the article make for the proposed movie theater (the noise filter)?" was followed by a scale whose endpoints were labeled "a very strong case" and "a very weak case." The second question was "How convincing did you find the arguments concerning the proposed movie theater (the noise filter)?", followed by a scale with "extremely convincing – not at all convincing" as its endpoints. Responses to the two questions were averaged to obtain a measure of judged argument quality.

A second pair of questions assessed the perceived personal relevance of the product: "How relevant to you personally was the information about the proposed movie theater (the noise filter)?" and "How likely is it that you personally could actually make use of the proposed movie theater (the noise filter)?" The endpoints for the first question were "extremely relevant – not at all relevant" and for the second question they were "extremely likely – extremely unlikely." Responses to the two questions were again averaged to obtain a measure of perceived relevance.

Finally, the questionnaire contained an open-ended question which asked respondents to indicate how much money they would be willing to pay for construction of the movie theater (per semester in the form of additional student fees) and to buy a personal noise filter.

Results of Manipulation Checks

To check the effectiveness of the quality and relevance manipulations, 2 (strong versus weak arguments) X 2 (high versus low product relevance) analyses of variance were performed on the indices of judged argument quality and perceived personal relevance. Mean judgments for the movie theater are shown in Table I, and for the noise filter in Table II. High scores indicate high judged quality of arguments or high judged relevance of product. It can be seen that both manipulations were successful. The descriptions of the movie theater and of the noise filter that contained strong arguments were judged to be of significantly higher quality than the descriptions that contained weak arguments, $F(1, 76) = 3.82$, $p < .05$ and $F(1, 76) = 6.58$, $p < .05$ for the two products respectively. Also of importance, the argument quality manipulation had no significant cross-over effects on the judged relevance of the products, $F(1, 76) = .08$ and .14, respectively.

Similarly, each of the two products was judged to be significantly more relevant in the high relevance conditions than in the low relevance conditions, $F(1, 76) = 5.82$, $p < .01$ for the movie theater and $F(1, 76) = 31.67$, $p < .01$ for the noise filter. The relevance manipulation had no significant cross-over effects on the judged quality of the arguments, $F(1, 76) = .63$ and 1.32, respectively. Finally, there were no significant interactions between the two manipulations on either the judged quality of the arguments, $F(1, 76) = .24$ and 2.58 for the two products, or on the judged relevance of the products, $F(1, 76) = .00$ and 1.12.

Insert Tables I and II about here

MAIN STUDY

Method

Participants. A total of 192 students at the University of Massachusetts took part in the main study, 135 females and 57 males. The great majority (87%) were in their freshman or sophomore years, enrolled in low-level psychology courses. They were told that the investigators were developing stimulus materials for two different research projects, that the projects were unrelated, and that data was being collected at the same time to save time and effort, and to make it possible to give the participants full experimental credit. The materials developed in the pilot studies were used to construct a self-contained booklet. Participants were asked to complete the two projects in the order in which they appeared in the booklet, and they were assured that their answers to all questions were confidential and anonymous. The questionnaire was administered in small groups of 5 to 15 students, and took approximately 40 min. to complete. After handing the booklet to the experimenter, the participants received a written explanation of the experiment and were offered an opportunity to have their questions answered.

Motivational priming manipulation. The first part of the booklet consisted of the sentence unscrambling task. Developed by Costin [9], it has been used as a priming procedure to make accessible certain cognitive or motivational constructs [5, 29]. Adapted for the present study, the questionnaire listed 45 sentences containing six words each in scrambled order, including one word that did not belong. Participants were told that the investigators were trying to develop a measure

of cognitive flexibility and that the respondent's task was to cross out the word that did not belong in the sentence and to write the correct sentence in proper order on a blank line provided underneath each sentence. The sentences were selected to express predominantly an altruistic orientation or predominantly an individualistic orientation. Specifically, one form of the instrument contained 30 altruistic statements and 15 neutral sentences. To illustrate, among the altruistic statements were "Giving is better than receiving," "Sara likes to help others," and "Cooperation assures the best results." Interspersed among these items were such neutral sentences as "Paul is doing his homework" and "I bought new shoes today." A second form of the instrument was composed of 30 individualistic statements and the same 15 neutral statements as in the first form. Among the individualistic sentences were "Charity must begin at home," "I am responsible for myself," and "Paul doesn't like social pressure." One half of the respondents completed the altruistic version of the task while the other half completed the individualistic version. They were given instructions concerning the task and were asked to work quickly but at the same time to be careful to avoid making mistakes.

Personal relevance and argument quality. The second part of the booklet assessed attitudes and willingness to pay with respect to the proposed campus movie theater and the personal noise filter. It was described as an opinion survey, and the participant's task consisted of evaluating materials for the survey. The two topics appeared in counterbalanced order; the movie theater came first for one half the respondents while it came second for the other half. There were strong and weak versions of the descriptions, and the product was either high or low in personal relevance. The questionnaires were constructed such that if the first product (movie theater or noise filter) was of high relevance then the second was of low relevance, and vice versa. Similarly, if the first

description contained strong arguments, then the second contained weak arguments, and vice versa. Equal numbers of respondents were assigned at random into the different experimental conditions.

In the case of the public good, the participants were told that the University Administration is considering a plan to construct a movie theater on campus, and they were given an anticipated completion date for the project. One half of the respondents were told that the building would be ready in "September 1994, about 18 months from today" whereas the remaining participants learned that completion was anticipated in "September 1997, about 4½ years from today." The earlier completion date was designed to make the project personally relevant to the college students. With the later completion date, the participants in the study would not personally benefit from the proposed theater.

At this point, the participants were asked to read carefully an article describing the proposed project, an article that had ostensibly been published recently in *The Campus Chronicle*, an actual campus newsletter. They saw what appeared to be a photocopy from the *Chronicle*. The article reported on information ostensibly provided by "William Reinert, Spokesperson for the Chancellor's Office." The first paragraph reiterated that a new campus movie theater was being planned and restated the anticipated completion date to reinforce the relevance manipulation.

In the strong version of the article, the spokesperson explained that the proposed movie theater was to serve the needs of the local student population, that existing facilities were inadequate, that no facilities were currently available to screen video movies, and that even the existing facilities (mainly class rooms) were not always available. He emphasized that the proposed theater would not duplicate the services provided by commercial movie houses in the area in that the movies shown would be mainly of an artistic nature produced by small companies and movies produced

by the students themselves. He concluded that the proposed theater would greatly enhance the educational opportunities of students at the university.

In the weak version of the article, the spokesperson explained that the proposed movie theater was to serve the needs of all people in the area, that even though there were plenty of movie theaters in the local communities, it would be nice to have a facility right on campus. He pointed out that many students and faculty don't like to watch movies in the same locations in which lectures or meetings take place, and that having a separate building to house the theater would make it easier for people from off-campus to find it. He emphasized that the proposed movie theater would have comfortable seats, would be well equipped, and would be able to compete with commercial movie theaters. He concluded that the proposed theater would offer new entertainment opportunities to students at the university.

In both versions, the article ended by pointing out that to encourage student participation, admission would be free for all students.

The second topic addressed in the survey concerned a private good, a "personal noise filter." Personal relevance was manipulated primarily by varying the target population, although different product availability dates were also mentioned. In the version with high personal relevance, this hypothetical product, described as being under development by the *DigiSys Corporation*, was said to be intended for college students to help them concentrate on their studies in a noisy environment, and it was to be introduced in the fall of 1993. In the low personal relevance version, the filter was said to be intended for factory and construction workers to improve safety in the workplace, and it was to be ready in early 1997.

The participants were asked to read an article about the personal noise filter ostensibly published in the *Silicon Valley Advisor*, a fictitious computer newsletter. They read what appeared to be a photocopy of the article. As in the case of the movie theater, two descriptions of the noise filter were constructed, one containing strong arguments, the other weak arguments. In the strong version, sources at the *DigiSys Corporation* had informed the *Advisor* that the personal noise filter was expected to be a popular study aid with college students (factory workers) because it filtered out ambient noise. It was explained that the filter consists of a set of ear phones with an embedded digital sound chip that counteracts and cancels incoming sound waves. The filter was said to be vastly superior to mechanical ear plugs. It could be adjusted to enable the user to dampen sounds in the environment or to virtually eliminate any sounds. The product would enable students to filter out loud music and other sources of noise in their environment, and thus help them to concentrate on their studies (filter out environmental noise for factory workers and help them focus on their tasks). Finally, the filter earphones would also be usable as conventional earphones to be connected to a stereo system, they would be attractively styled, comfortable to wear, and easy to use.

In the weak version of the article, the information provided by the *DigiSys Corporation* indicated that the digital sound chip in the personal noise filter masks noise in the environment by producing a loud sound of its own. The filter was said to work nearly as well as mechanical ear plugs, but that it does its work electronically and can be switched on or off. By generating a penetrating sound of its own, the filter would mask noise, making it less identifiable, and would thus enable students to concentrate on their studies (factory workers to focus on their tasks). Users would be able to choose among various random and unpredictable noise patterns, and the intensity

of the noise could be set at different levels for each ear. The earphones were to be designed for the mass market, styled to suit contemporary tastes, and offered in different colors.

Questionnaire

The description of a product was followed immediately by a 20-item evaluative semantic differential scale. The sentence stem "Constructing a campus movie theater is" or "The personal noise filter is" was rated on each of the 7-place bipolar scales. Responses to the scales were factor analyzed, and the first evaluative factor was extracted. This factor accounted for 55% of the variance in evaluations of the campus movie theater and 53% of the variance in evaluations of the personal noise filter. The 12 items with the highest loadings on the evaluative factor were selected to construct a measure of attitude toward each product. This procedure resulted in the selection of the same 12 items for the two products: *desirable–undesirable, happy–sad, unpleasant–pleasant, strong–weak, good–bad, important–unimportant, harmful–beneficial, useful–useless, foolish–wise, meaningful–meaningless, right–wrong,* and *productive–destructive.* Responses were coded from 1 (negative end of the scale) to 7 (positive end) and were averaged to yield a measure of general attitude toward the product in question. The internal consistency of these attitude measures, as indexed by Cronbach's alpha coefficient, were .96 for the movie theater and .95 for the personal noise filter.

The evaluative semantic differential scale was followed by the first WTP measure. With respect to the campus movie theater, the respondents received the following instructions.

> Construction of the campus movie theater would be quite expensive. Because of the State's financial difficulties, only a small part of the expense could be covered by State funds. Most of the money would have to be raised by selling bonds, and

these bonds would have to be repaid from student fees over a 30-year period. One option under consideration is to institute a new voluntary student fee, to begin in the **Fall semester of 1993**. As with the Mass PIRG fee, students could check a box if they did not want to pay the indicated fee for the movie theater.

A major purpose of this survey is to assess how much money, in the form of a voluntary fee, students on the Amherst campus would be willing to pay for construction of the proposed movie theater. In the space below, please enter the greatest amount of money you would be willing to pay each semester before you would check the box to indicate that you do not want to pay the movie theater fee.

I personally would be willing to pay a maximum of $_____ per semester in additional student fees to help finance construction of the Campus Movie Theater. An equivalent WTP measure was developed for the personal noise filter:

Development of the Personal Noise Filter involves a variety of new technologies, and it is difficult to anticipate how much it will cost to produce each unit. In this survey, we therefore are trying to assess how much money people like you would be willing to pay for a product of this kind.

In the space below, please enter the greatest amount of money you would be willing to pay for the Personal Noise Filter.

I personally would be willing to pay a maximum of $_____ to buy the Personal Noise Filter.

The third part of the questionnaire consisted of a series of eight attitudinal questions that were designed to assess the constructs in the theory of planned behavior [1, 2]. Unlike the semantic

differential scale described earlier, which assessed general attitudes toward each of the two products, the attitudinal measures in this section focused on the act of paying money for the products. There were two questions for each of the four constructs in the theory: attitude toward the behavior (paying a fee for the movie theater or buying the personal noise filter), subjective norm with respect to the behavior, perceived behavioral control, and behavioral intention. Bipolar graphic scales with seven spaces (numbered 1 to 7) were used, and the two scales for the same construct were interspersed among the scales for the other constructs. Respondents were instructed to circle the appropriate number on each scale.

Attitude toward the behavior was assessed by means of the following two items. (1) "For me to pay an additional student fee to help finance construction of the Campus Movie Theater would be" was rated on a *good–bad* scale and later (2) on a *harmful–beneficial* scale. Parallel items were construct for the concept, "For me to buy a Personal Noise Filter would be." Responses to the two scales were highly correlated ($r = .77$ for the movie theater and $r = .80$ for the noise filter), and were averaged to yield measures of attitudes toward the behaviors.

The first subjective norm item asked respondents to rate the statement, "Most people who are important to me would approve/disapprove of my paying an additional student fee to help finance construction of the Campus Movie Theater" on an *approve–disapprove* scale. The second measure of subjective norm was phrased, "Most people who are important to me think that I should pay an additional student fee to help finance construction of the Campus Movie Theater." This statement were rated on a *likely–unlikely* scale. Responses to the two items correlated .70. Parallel items were constructed for the act of buying a Personal Noise Filter, and they correlated .75 with each

other. With respect to each behavior, the average of the two items was used as a measure of subjective norm.

Two ratings were used to assess perceived behavioral control. Respondents were asked to rate (1) "For me to pay an additional student fee to help finance construction of the Campus Movie Theater would be" on an *easy–difficult* scale, and (2) "I believe that I could afford to pay an additional student fee to help finance construction of the Campus Movie Theater" on a *true–false* scale. Similar items were used to assess perceived behavioral control with respect to buying a Personal Noise Filter. The correlations between the two control items were .74 and .58 for the two products, and responses were again averaged.

Finally, behavioral intentions were measured by means of the following two statements. (1) "How likely is it that you would pay an additional student fee to help finance construction of the Campus Movie Theater?" *(likely–unlikely)*. (2) "All things considered, would you be willing to pay an additional student fee to help finance construction of the Campus Movie Theater?" (*I would–I would not)*. These two items correlated .91 with each other, and parallel items constructed for the behavior of buying a Personal Noise Filter correlated .92. The average of the two responses served as a measure of behavioral intention.

The next part of the questionnaire contained a second procedure designed to assess willingness to pay. In contrast to most previous studies on the CVM, it was decided to include more than one WTP measure in order to increase the reliability and generalizability of the results. The second measure suggested a certain amount of money to the respondents and asked them to indicate their willingness to pay this amount. The amount indicated was based on the results of the pilot research. In response to open-ended questions, the mean WTP estimates of participants in the pilot studies

were about $15 each semester for construction of the movie theater and about $20 for the personal noise filter. With respect to the movie theater, the second WTP measure was worded as follows.

> As an alternative to the voluntary fee, a second option under consideration is to impose a compulsory fee on all students to help pay for the proposed Campus Movie Theater. Although the exact cost of construction is not known at the present time, the best estimate we have is that the total cost would be about 2.5 million dollars. To pay for the loans in this amount, student fees would have to be raised by about $15.00 per semester, beginning in the **Fall semester of 1993.**
>
> In the following questions you are asked to indicate whether you personally would be willing to pay this amount in additional student fees.
>
> (a) Would you be willing to pay $15.00 per semester in additional student fees to help finance construction of the Campus Movie Theater? (check one)
>
> _____ yes (Please go to b)
>
> _____ no (Please go to c)
>
> (b) What is the maximum increase in student fees per semester you would be willing pay?
>
> $_____
>
> (c) How much would you be willing to pay in additional student fees per semester to help finance construction of the Campus Movie Theater?
>
> $_____

For the personal noise filter, this item took a similar form.

At this stage of the development of the Personal Noise Filter, it is difficult to determine the retail price at which the product will be offered for sale. Based on anticipated costs of production and marketing, *DigiSys* estimates that the Personal Noise Filter will be offered at a list price of about $20.00.

In the questions below, you are asked to indicate whether you personally would be willing to pay $20.00 for the Personal Noise Filter.

(a) Would you be willing to pay $20.00 for the Personal Noise Filter? (check one)

_____ yes (Please go to b)

_____ no (Please go to c)

(b) What is the maximum price you would be willing to pay?

$_____

(c) How much would you be willing to pay for the Personal Noise Filter?

$_____

The amount of money entered in parts b or c was taken as the respondent's willingness to pay. The two WTP measures obtained in the present study correlated highly with each other ($r = .86$ for the movie theater and $r = .94$ for the noise filter). Given these high correlations, and because separate analyses yielded identical results, it was decided to construct a single WTP score by computing the mean of the two measures.

The last section of the questionnaire asked respondents to state their age, sex, and year in college. In addition, four questions were asked to establish each person's financial situation which might affect their ability to pay for the products considered in the present study. They were

asked to indicate who pays for their tuition, who pays for their living expenses, whether they own a car, and approximately how much money they spend on entertainment each semester.

Results

Preliminary analyses showed that there were no significant effects due to the order in which the public and private goods had been presented in the questionnaire. Because of the relatively small number of male participants, sex differences could not be systematically evaluated, but inspection of the results did not reveal any clear patterns. Order of presentation and gender are therefore not further considered. Finally, the respondents' financial situation also had no systematic impact on their responses. Neither willingness to pay nor any of the attitudinal measures revealed significant relations with the different measures of the respondent's financial situation, nor were the effects of the experimental manipulations moderated in any way by controlling for the respondent's financial situation.

Willingness to pay. The first analysis examined the effects of the experimental manipulations on the WTP index. Table III presents the mean dollar amounts participants were willing to pay for construction of the campus movie theater. These data were submitted to a three-way analysis of variance. The factors in the analysis were argument quality (strong versus weak), product relevance (high versus low), and motivational orientation (altruistic versus individualistic).

Insert Table III about here

The results of the analysis provided strong support for the study's hypotheses. First, argument quality had a highly significant effect on WTP judgments, $F(1, 181) = 90.76$, $p < .01$. Inspection

of Table III shows that under all experimental conditions, respondents who read the description of the movie theater that contained strong arguments were willing to pay more money than were respondents who read the weak description. With a grand mean of $13.28, mean WTP in the strong arguments condition was $18.79 as opposed to only $7.78 in the weak arguments condition. Thus, by providing a strong description, we were able to more than double the amount of money respondents stated they were willing to pay for construction of the campus movie theater.

Second, as predicted, the magnitude of this effect was moderated by the personal relevance of the proposed transaction, as indicated by a significant interaction between argument quality and product relevance, $F(1, 181) = 18.65$, $p < .01$. Inspection of Figure 1 reveals the nature of the interaction: the effect of argument quality was considerably greater when the product was personally relevant than when it was irrelevant. Apparently, when construction of the movie theater was of personal relevance, the students paid closer attention to the arguments contained in the description and were thus more sensitive to the quality of those arguments, as compared to students for whom construction of the movie theater was largely irrelevant.

Insert Figure 1 about here

Third, there was a significant main effect of the priming manipulation, $F(1, 181) = 9.44$, $p < .01$. As expected, respondents for whom an altruistic orientation was activated were willing to pay more money for the movie theater ($M = $15.06) than were respondents in the individualistic condition ($M = $11.51). Thus, at least in the case of a public good, activation of an altruistic orientation seems to raise WTP estimates appreciably.

Insert Figure 2 about here

Finally, the analysis of variance revealed a significant priming by relevance interaction, $F(1, 181) = 7.31$, $p < .01$. This interaction was also predicted. As can be seen in Figure 2, the peripheral cue (motivational orientation) had an effect on WTP judgments only when the product was of little personal relevance. It appears that with high personal relevance, WTP was determined largely by the description of the product, and whether an altruistic or individualistic motivation had been activated was of little importance.

It is instructive to compare the results for the campus movie theater to the findings with respect to a private good, the personal noise filter. Across all conditions of the experiment, respondents were willing to pay an average of $18.84 for the filter. Mean WTP under the different experimental conditions is shown in Table IV. An analysis of variance revealed only two significant effects: a main effect of argument quality, $F(1, 184) = 6.06$, $p < .05$, and an interaction between argument quality and product relevance, $F(1, 184) = 5.86$, $p < .05$. Inspection of Table IV shows that respondents in the strong arguments condition were generally willing to pay more money for the noise filter ($M = $21.99) than were respondents in the weak arguments condition ($M = $15.69). However, as can be seen in Figure 3, the effect of argument quality again appeared only when the product was of high personal relevance. It is only here that respondents were expected to pay careful attention to the nature of the arguments.

Insert Table IV and Figure 3 about here

The analysis revealed no significant main effect or interaction involving the priming manipulation. As expected, altruistic or individualistic orientations were irrelevant for WTP judgments in the case of a private good.

Attitudes. The results reviewed thus far indicate that WTP judgments are sensitive to the kinds of manipulations that have, in the past, been found to influence attitudinal judgments. Further evidence for the similarity between contingent valuation estimates and attitudes is provided by the correlations between the two types of measures, shown in Table V. All correlations between willingness to pay and the various attitudinal indices were highly significant ($p < .01$). As might be expected, the amount of money respondents were willing to pay for a public or private product correlated most strongly with intentions to pay ($r = .56$ for the movie theater and $r = .57$ for the noise filter).

Insert Table V about here

The effects of the experimental manipulations on the attitudinal judgments were very similar to the effects described earlier with respect to willingness to pay, except for the priming manipulation. Due to space limitations, we present results only for the semantic differential measure of attitude, but the results for the other attitudinal measures were virtually identical.

Insert Table VI about here

Mean attitudes toward construction of a campus movie theater are shown in the top part of Table VI, and the means for the personal noise filter are shown in the bottom part. High numbers indicate positive attitudes. Analyses of variance revealed the following significant effects. With respect to attitudes toward the movie theater there was a main effect of argument quality, $F(1, 184) = 11.54$, $p < .01$, and an interaction between argument quality and product relevance, $F(1, 184) = 9.68$, $p < .01$. As was the case for willingness to pay, respondents expressed more favorable attitudes in the strong arguments condition ($M = 5.51$) than in the weak arguments condition ($M = 4.87$). Moreover, the significant interaction showed again that this effect of argument quality was stronger when the movie theater was of high personal relevance than when it was not.

Contrary to our initial expectations, the priming of an altruistic or an individualistic motivational orientation had no significant effects on attitudes toward construction of the campus movie theater. Whereas willingness to pay judgments were sensitive to this peripheral cue, especially under low personal relevance conditions, attitudes were not. In retrospect, this finding is perhaps understandable. Under low motivation to process information about a public good, an altruistic orientation can increase willingness to pay without affecting attitudes. Thus, two individuals may hold equally favorable attitudes toward the movie theater, yet the person who has an altruistic orientation may nevertheless be willing to pay more money to help in its construction.

With respect to attitudes toward the personal noise filter, the analysis of variance resulted again in a significant main effect for argument quality, $F(1, 184) = 16.38$, $p < .01$, as well as a

significant interaction between argument quality and product relevance, $F(1, 184) = 6.03, p < .05$. Attitudes toward the noise filter were more favorable when the description contained strong arguments ($M = 5.57$) than when it contained weak arguments ($M = 4.90$), and this effect was significantly stronger in the high than in the low personal relevance condition. The analysis also produced an unanticipated main effect due to product relevance, $F(1, 184) = 6.93$, $p < .01$, such that attitudes toward the noise filter were somewhat less favorable in the relevant ($M = 5.00$) than in the irrelevant condition ($M = 5.47$).

DISCUSSION AND CONCLUSIONS

The results reported in this article provide empirical evidence in support of the hypothesis that CV measures are subject to information bias. Following recent recommendations [13, 21, 25], respondents were given detailed information about a public good, yet willingness to pay estimates were found to be influenced by the quality of arguments contained in the descriptions. Perhaps more important, argument quality had a particularly strong impact under conditions that encouraged careful scrutiny of those arguments. The recommendation to provide participants in CV surveys with detailed information about the proposed transaction may therefore not offer a satisfactory solution to the problem of information bias in contingent valuation. The information given to respondents in a CV survey is likely to be taken into careful consideration only by participants who are sufficiently motivated to process the information. Moreover, even when respondents do take the information into account, the description may bias their estimates depending on the nature and quality of the arguments it contains. On the other hand, respondents who are not sufficiently motivated to process the information they are given about the product will tend to base their WTP

estimates in part on relatively superficial contextual cues, in this case, priming of an altruistic or individualistic motivational orientation.

WTP measures obtained in the present study varied widely under different experimental conditions. Construction of a campus movie theater was, on the average, worth $22.50 to respondents who read a description that contained strong arguments in favor of the proposed transaction, for whom construction of the movie theater was personally relevant, and for whom an individualistic motivational orientation had been activated. In contrast, the same transaction was worth only $5.62 on the average when the description contained relatively weak arguments, and the movie theater was not personally relevant (see Table III). That quality and personal relevance of information, as well as subtle contextual cues, had such strong effects on WTP estimates is, in our opinion, due to the fact that respondents had little prior knowledge about the campus movie theater. Because this is generally true in valuation of public goods, the potential for information bias is inherent in most CV surveys. Interestingly, quality and relevance of information also affected WTP for the personal noise filter, a private good. Because the personal noise filter was also an unfamiliar product, respondents would have been subject to similar information biases. It remains to be seen whether these biases would disappear if willingness to pay were measured with respect to a well-known private good.

The fact that WTP judgments were found to be affected by the kinds of factors that also tend to influence attitudinal measures suggests a basic similarity, but WTP may capture certain aspects of attitudes to which other attitude measures are not particularly sensitive. Thus, under low personal relevance, respondents with an altruistic orientation stated a greater willingness to pay for the public good than did respondents with an individualistic orientation (see Figure 2).

This effect was not obtained in the analyses of attitudes toward the private good. Overall, the correlations between WTP and various attitudinal measures, although significant, were of moderate magnitude and lower than in previous studies [4, 18]. It thus appears that contingent value judgments may be useful instruments for the assessment of attitudes toward public goods, instruments that capture aspects of attitude not contained in other, more conventional attitude measures.

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TABLE I
Check of Argument Quality and Product Relevance Manipulations – Movie Theater

	Strong arguments		Weak arguments	
Dependent variable	Relevant	Irrelevant	Relevant	Irrelevant
Judged quality of arguments	4.25	4.35	3.48	3.90
Judged relevance of product	4.48	3.48	4.35	3.38

TABLE II
Check of Argument Quality and Product Relevance Manipulations – Noise Filter

	Strong arguments		Weak arguments	
Dependent variable	Relevant	Irrelevant	Relevant	Irrelevant
Judged quality of arguments	5.65	4.45	5.05	4.00
Judged relevance of product	4.50	2.83	4.75	2.30

TABLE III
Mean Willingness to Pay (in Dollars) – Campus Movie Theater

	Strong arguments		Weak arguments	
Orientation	Relevant	Irrelevant	Relevant	Irrelevant
Altruistic	22.08	19.33	6.92	11.90
Individualistic	22.50	11.24	5.65	6.63

TABLE IV
Mean Willingness to Pay (in Dollars) – Personal Noise Filter

	Strong arguments		Weak arguments	
Orientation	Relevant	Irrelevant	Relevant	Irrelevant
Altruistic	25.10	17.37	11.31	22.04
Individualistic	26.08	19.44	14.85	14.56

TABLE V
Correlations Between WTP and Attitudes

Attitudinal measure	Movie theater	Noise filter
Attitude toward product	.36	.38
Intention to pay	.56	.57
Attitude toward paying	.40	.53
Subjective norm	.37	.52
Perceived behavioral control	.21	.38

Note. All correlations are significant at $p < .01$.

TABLE VI
Mean Attitudes Toward Public and Private Goods

Campus Movie Theater

	Strong arguments		Weak arguments	
Orientation	Relevant	Irrelevant	Relevant	Irrelevant
Altruistic	5.73	5.15	4.91	5.32
Individualistic	5.77	5.38	4.14	5.09

Personal Noise Filter

	Strong arguments		Weak arguments	
Orientation	Relevant	Irrelevant	Relevant	Irrelevant
Altruistic	5.38	5.70	4.38	5.22
Individualistic	5.72	5.46	4.52	5.49

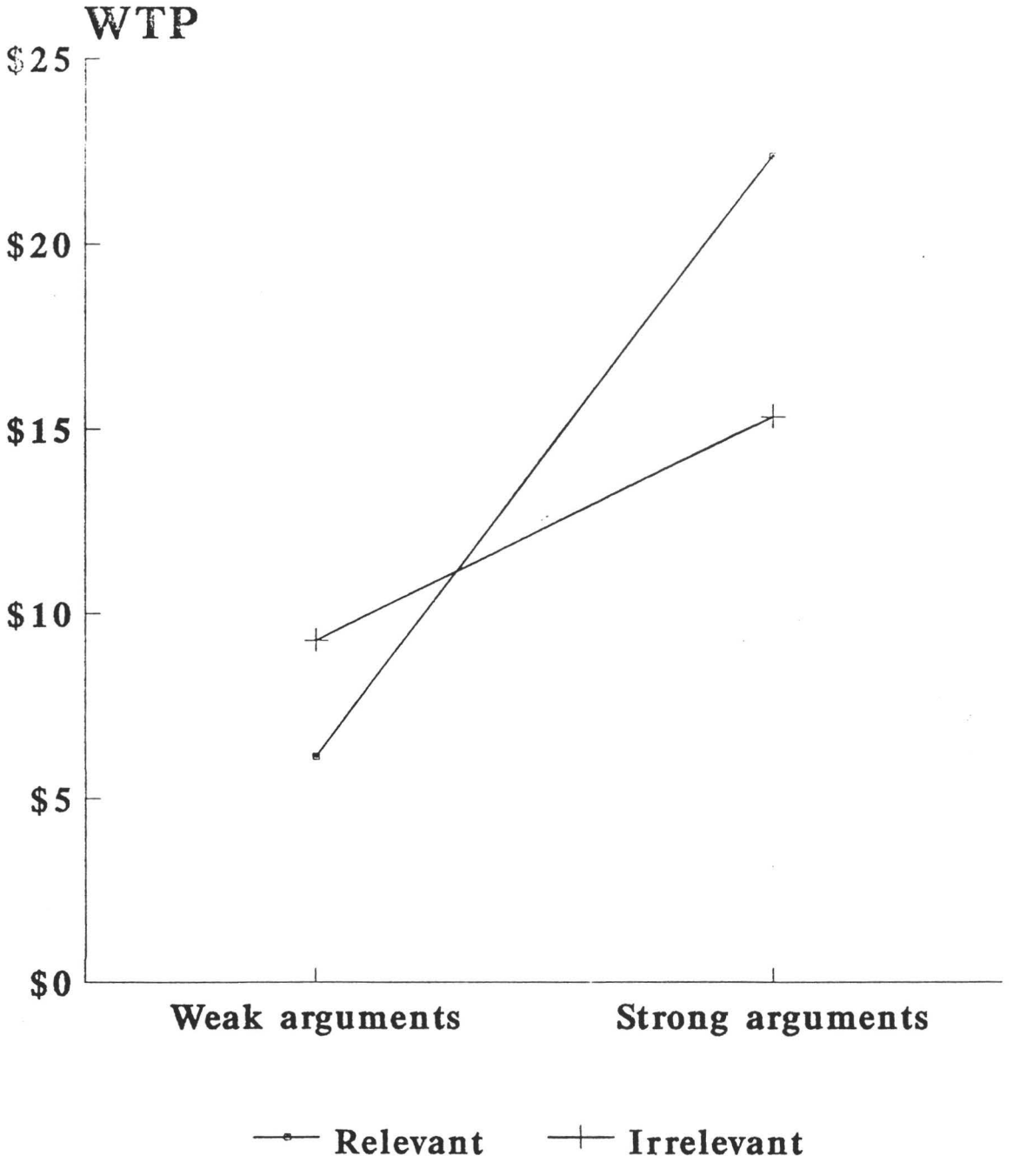
FIGURE LEGENDS

Figure 1. Effects of argument quality and product relevance on willingness to pay for a Campus Movie Theater.

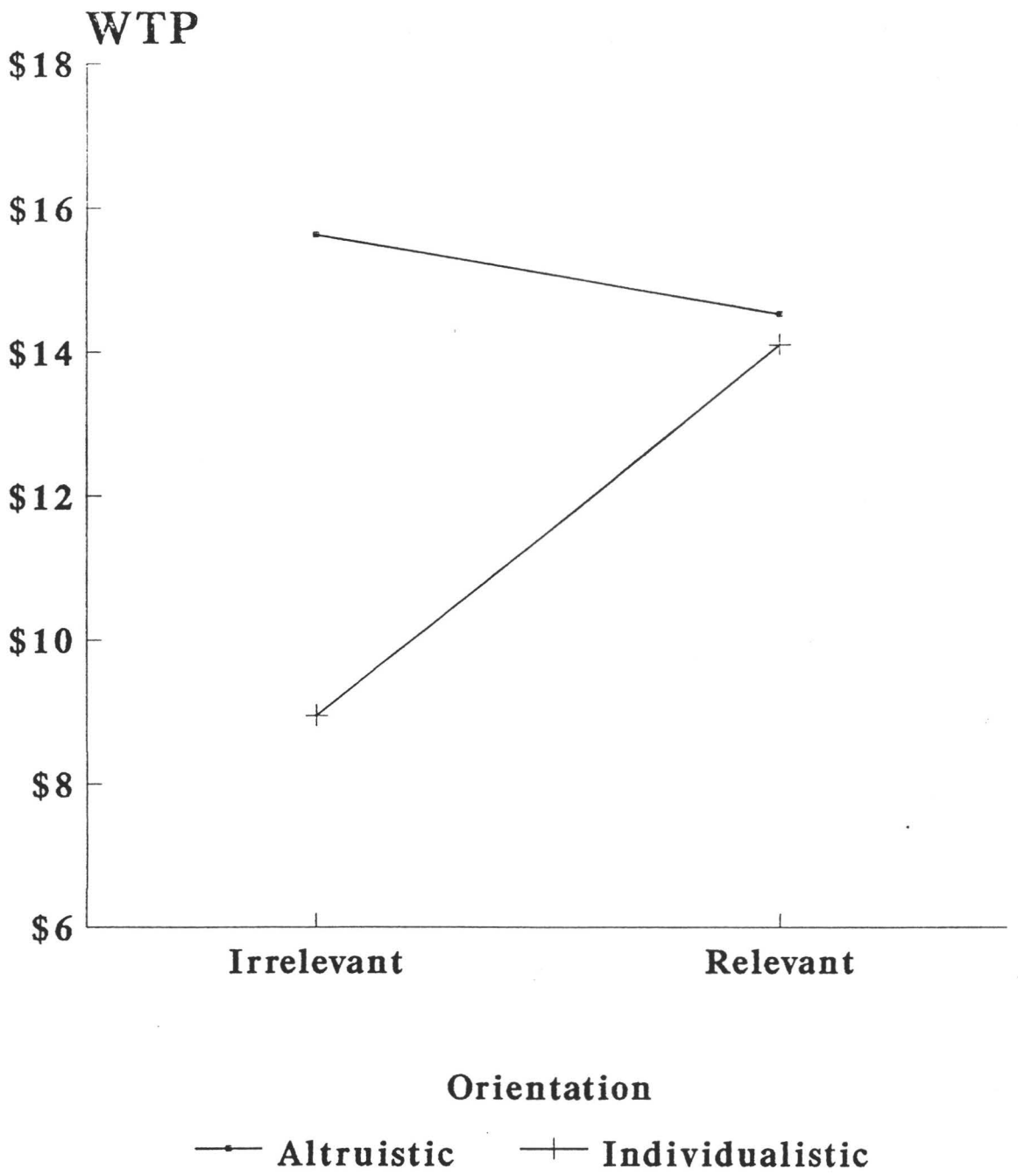
Figure 2. Effects of product relevance and motivational orientation on willingness to pay for a Campus Movie Theater.

Figure 3. Effects of argument quality and product relevance on willingness to pay for a Personal Noise Filter.

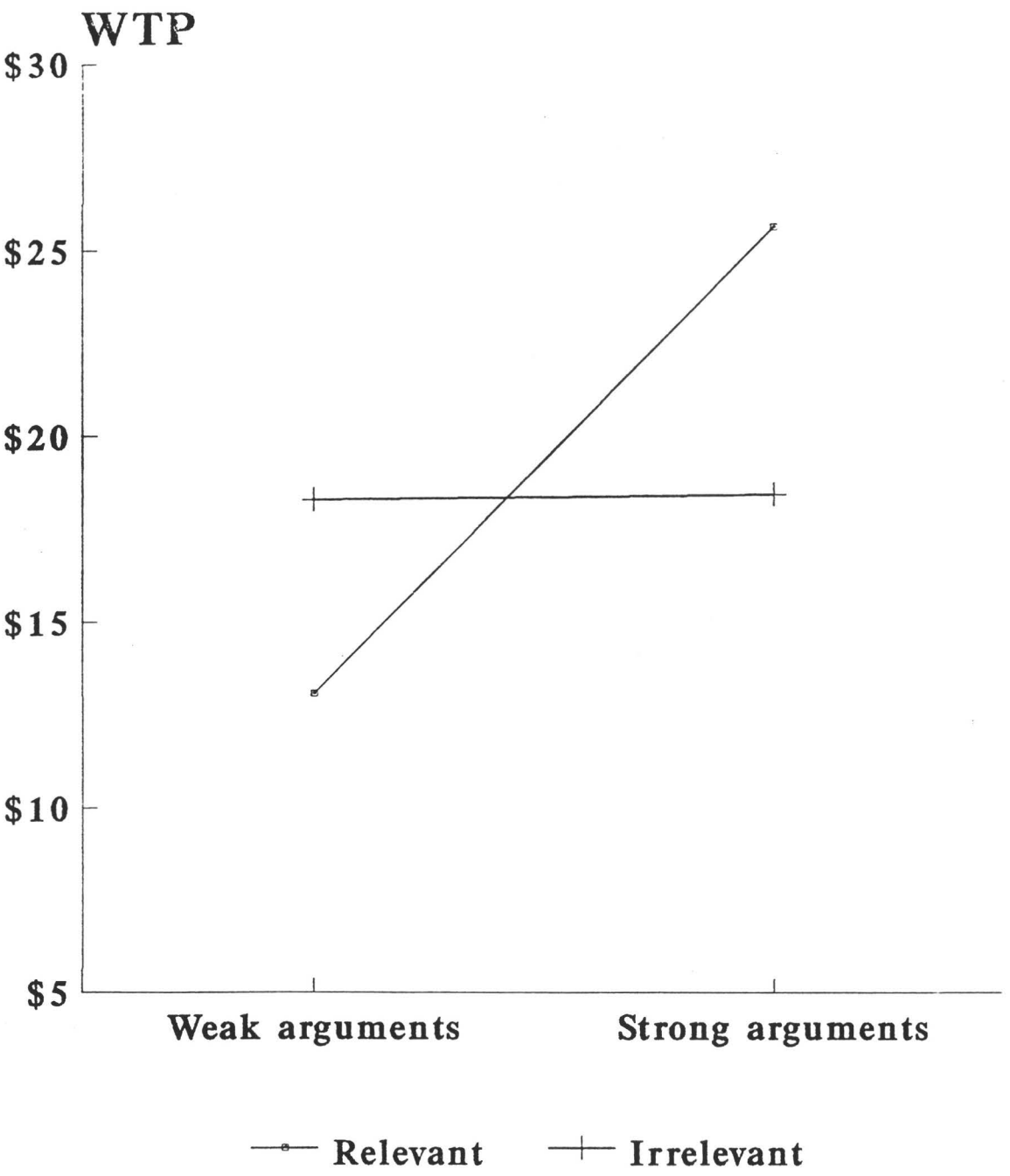
Movie Theater



Movie Theater



Noise Filter



Appendix

This appendix contains the materials used in the final experiment (not the pilot test). Note that the fonts used to print the articles for this appendix differed somewhat from those used to print the actual materials used with respondents.

Instructions

We are collecting data for two different research projects being conducted by psychology faculty and graduate students. We are collecting the data in a single session to be able to give you a full credit point, and to save us time and effort.

Please complete the projects in the order in which they appear in the booklet. Turn in the materials after you have completed the second project. Your answers to all questions are completely confidential and anonymous. Please do not put your name on the questionnaire.

Thank you for your participation.

c/MSR/FWI

Project # 1

Sentence Unscrambling Task

This project is part of a research program into the determinants of cognitive flexibility. Your participation will help us to develop a measure of a person's ability to deal with information in a flexible manner.

Each item on the following pages consists of a set of 6 words that are mixed up. The first word is always in place, but the other words have to be rearranged to make a sentence. It is your task to cross out the word that does not belong, and to write the complete sentence on the blank line underneath. In the following example,

Riding a with fun is bicycle

you would cross out the word "with"

Riding a ~~with~~ fun is bicycle

and write the sentence ***Riding a bicycle is fun*** on the blank line.

Please work quickly, but at the same time be careful to avoid making mistakes. After you have unscrambled all sentences, read over the sentences again to make sure that there are no mistakes.

Thank you for your cooperation.

Altruistic Prime

1. Bill environment about the brown cares

_____

2. Giving than is better receiving lovely

_____

3. Happiness icecream an is table cone

_____

4. Join very others effort of the

_____

5. Together accomplish we more mountain can

_____

6. Jill read to follow books likes

_____

7. People best purple groups in work

_____

8. Tennis fun friends sport a is

_____

9. Staying boring justice alone is home

_____

10. Sara to help likes window others

_____

11. Try late not be to boys

_____

12. We people don't selfish like voice

_____

13. Bill others care sky of takes

_____

14. I keys lost song have my

_____

15. Giving can lives brick blood save

_____

16. Exercise family good is you for

_____

17. Dan together and Lucy work expensive

_____

18. I shoes today bought new friends

_____

19. We window loyalty to friends value

_____

20. I instinct rule the golden follow

_____

21. The tray dropped company his waiter

_____

22. My depend on friends spider me

_____

23. Joan the supports common jacket cause

_____

24. All winter people hands must join

_____

25. Beth breakfast for eats money cereal

_____

26. Mary her protects driving always friends

_____

27. Sara diamond has ring a music

_____

28. Lucy to charity money inside donates

_____

29. Alice's movie depend friends her on

_____

30. Plants water need and proof sunlight

_____

31. Lynn to the gives homeless brick

_____

32. Each must person part telephone take

_____

33. We poor help entry the should

_____

34. Caring important for wolf is others

_____

35. Bill inside family cares his about

_____

36. Sam cheap drive how to learned

_____

37. Cooperation loveless results assures the best

_____

38. I for others silver responsible am

_____

39. Sandy a tire flat symbol had

_____

40. People me on several depend can

_____

41. My city other influence actions people

_____

42. Paul homework doing snow his is

_____

43. I parking fair share my contribute

_____

44. Ellen others enjoys with sand living

_____

45. People for clever each care other

_____

Project # 1

Sentence Unscrambling Task

This project is part of a research program into the determinants of cognitive flexibility. Your participation will help us to develop a measure of a person's ability to deal with information in a flexible manner.

Each item on the following pages consists of a set of 6 words that are mixed up. The first word is always in place, but the other words have to be rearranged to make a sentence. It is your task to cross out the word that does not belong, and to write the complete sentence on the blank line underneath. In the following example,

Riding a with fun is bicycle

you would cross out the word "with"

Riding a ~~with~~ fun is bicycle

and write the sentence ***Riding a bicycle is fun*** on the blank line.

Please work quickly, but at the same time be careful to avoid making mistakes. After you have unscrambled all sentences, read over the sentences again to make sure that there are no mistakes.

Thank you for your cooperation.

Individualistic Prime

1. Bill looks himself brown out for

_____

2. Charity must home begin little at

_____

3. Happiness an is icecream table cone

_____

4. I am responsible delay for myself

_____

5. We most mountain by accomplish ourselves

_____

6. Jill read to follow books likes

_____

7. I goals rustic my choose own

_____

8. Tennis fun friends sport a is

_____

9. Good are forgotten deeds shelves soon

_____

10. Success doing is me important to

_____

11. Try late not be to Spain

_____

12. Alice an person size is independent

_____

13. Take get whatever can important you

_____

14. I keys lost song have my

_____

15. I be take of myself care

_____

16. Exercise family good is you for

_____

17. Joan better by works rain herself

_____

18. I shoes today bought new friends

_____

19. You single rely cannot others on

_____

20. Let money others waste insane their

_____

21. The tray dropped company his waiter

_____

22. Dan confident chimney about himself feels

_____

23. Worrying is others ceiling about foolish

_____

24. No me depends on literature person

_____

25. Beth breakfast for eats money cereal

_____

26. Julie it children all did herself

_____

27. Sara diamond has ring a music

_____

28. Most basically are theory people egotistic

_____

29. Helping rarely coffee others is appreciated

_____

30. Plants water need and proof sunlight

_____

31. Paul pressure social doesn't hairy like

_____

32. There many are too lightning volunteers

_____

33. Hold wallet jogging on your to

_____

34. The three phone orphan times rang

_____

35. Being cabinet can be fun alone

_____

36. Committees walk are time our wasting

_____

37. Sam cheap drive how to learned

_____

38. Betsy side bread a has materialistic

_____

39. Sandy a tire flat symbol had

_____

40. Other down you people furious slow

_____

41. Public horse our money projects waste

_____

42. Paul homework doing snow his is

_____

43. Bob school himself puts devious through

_____

44. Independence important is Barbara for refuse

_____

45. Being good tower selfish makes sense

_____

Opinion Survey

We are currently conducting opinion surveys among University of Massachusetts students. These surveys deal with two different topics. On the following pages, you are asked to complete a short questionnaire concerning each topic.

Thank you for your cooperation.

****

The first topic of interest is a product developed by the *DigiSys Corporation*, located in the "Silicon Valley" south of San Francisco. *DigiSys* has recently announced the development of a **Personal Noise Filter**. This filter is intended to be of particular appeal to college students, but it could also be of use to other individuals. Development of the personal noise filter is quite advanced and is given high priority in the company's production schedule. The company hopes to introduce the product in the third quarter of 1993.

A brief description of the Personal Noise Filter was published in the *Silicon Valley Advisor*, a newsletter that reports on computer companies in the San Francisco area. This description is reproduced on the following page. Please read it carefully.

(Reprinted from the *Silicon Valley Advisor*, December 3, 1992)

Strong argument / Relevant

What's New . . .

Noise Filter for College Students

Sources at DigiSys Corp. in Sunnyvale inform the Advisor of a new product in an advanced stage of development. The product, tentatively named the "Personal Noise Filter," is scheduled to be test-marketed in the fall of 1993. Expected to become a popular study aid with college students, the PNF is designed to help students concentrate by filtering out ambient noise.

The Advisor has learned that the PNF consists of a set of earphones with an embedded digital sound chip. The sound chip filters out noise in the environment by analyzing the frequencies of incoming sound waves. It then generates symmetrical but opposite waves that can cancel the incoming sounds. As a result, noise can be easily controlled. The PNF is vastly superior to mechanical ear plugs. It can be adjusted to merely dampen sounds in the environment, or to virtually eliminate any sounds.

The idea for the Personal Noise Filter arose in response to a common problem faced by college students. Often living at close quarters, students find it hard to study because of voices, loud music, or other background noise in the environment. By generating complementary sound waves, the PNF filters out the voices and music, producing a silent space in the midst of loud noise. This allows students to focus on their reading and writing, or on other work that requires concentration.

According to technicians in the marketing department at DigiSys, the PNF will be hard to resist. It will come with a switch, allowing it to be used like conventional earphones for connection to a stereo system. The earphones will be attractively styled, comfortable to wear, and easy to use. They will be sold in department stores, electronics centers, and university book stores.

Weak argument / Relevant

What's New . . .

Noise Filter for College Students

Sources at DigiSys Corp. in Sunnyvale inform the Advisor of a new product in an advanced stage of development. The product, tentatively named the "Personal Noise Filter," is scheduled to be test-marketed in the fall of 1993. Expected to become a popular study aid with college students, the PNF is designed to help students concentrate by interfering with ambient noise.

The Advisor has learned that the PNF consists of a set of earphones with an embedded digital sound chip. The sound chip masks the noise in the environment by producing a loud sound of its own. The filter works nearly as well as mechanical ear plugs, but it does its work electronically and can be switched on or off.

The idea for the Personal Noise Filter arose in response to a common problem faced by college students. Often living at close quarters, students find it hard to study because of voices, loud music, or other background noise in the environment. By generating a penetrating sound of its own, the PNF masks the voices and music, making them almost unintelligible. This makes it easier for students to focus on their reading and writing, or on other work that requires concentration.

Users of the PNF will be able to choose among different settings to regulate the sound that is generated by the sound chip. These choices will consist of various random and unpredictable noise patterns. Morover, the intensity of sound can be set at different levels for each ear.

According to technicians in the marketing department at DigiSys, the PNF earphones will be designed for the mass market. They will be styled to suit contemporary tastes, offered in several different colors, and be sold in department stores, electronics centers, and university book stores.

Strong argument / Irrelevant

What's New . . .

Noise Filter for Factory Workers

Sources at DigiSys Corp. in Sunnyvale inform the Advisor of a new product in an early stage of development. The product, tentatively named the "Personal Noise Filter," is scheduled to be test-marketed in the early part of 1997. Expected to be popular among factory and construction workers, the PNF is designed to improve safety in the work place by filtering out ambient noise.

The Advisor has learned that the PNF consists of a set of earphones with an embedded digital sound chip. The sound chip filters out noise in the environment by analyzing the frequencies of incoming sound waves. It then generates symmetrical but opposite waves that can cancel the incoming sounds. As a result, noise can be easily controlled. The PNF is vastly superior to mechanical ear plugs. It can be adjusted to merely dampen sounds in the environment, or to virtually eliminate any sounds.

The idea for the Personal Noise Filter arose in response to a common problem faced by factory and construction workers. Forced to work in a very noisy environment, they often find it difficult to focus on the task and thus tend to make mistakes that can be dangerous to themselves or to their coworkers. By generating complementary sound waves, the PNF filters out the environmental noise and produces a silent space in the midst of the clamor. This allows the workers to focus on their tasks and helps them to avoid costly mistakes.

According to technicians in the marketing department at DigiSys, the PNF will be hard to resist. It will come with a switch, allowing it to be used like conventional earphones for connection to a stereo system. The earphones will be attractively styled, comfortable to wear, and easy to use. They will be sold in department stores, electronics centers, and hardware stores.

Weak argument / Irrelevant

What's New . . .

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The idea for the Personal Noise Filter arose in response to a common problem faced by factory and construction workers. Forced to work in a very noisy environment, they often find it difficult to focus on the task and thus tend to make dangerous mistakes. By generating a penetrating sound of its own, the PNF masks the noise in the environment, making it less identifiable. This makes it easier for workers to focus on their tasks and helps them to avoid costly mistakes.

Users of the PNF will be able to choose among different settings to regulate the sound that is generated by the sound chip. These choices will consist of various random and unpredictable noise patterns. Morover, the intensity of sound can be set at different levels for each ear.

According to technicians in the marketing department at DigiSys, the PNF earphones will be designed for the mass market. They will be styled to suit contemporary tastes, offered in several different colors, and be sold in department stores, electronics centers, and hardware stores.

We would now like to ask you a few questions about the Personal Noise Filter.

1. Please rate the Personal Noise Filter on the following scales. Circle a number on each of the scales, as it best describes your opinion.

The Personal Noise Filter is

desirable	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: undesirable
boring	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: interesting
selfish	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: unselfish
happy	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: sad
unpleasant	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: pleasant
serious	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: humorous
strong	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: weak
good	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: bad
pessimistic	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: optimistic
important	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: unimportant
active	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: passive
harmful	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: beneficial
attractive	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: unattractive
useful	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: useless
foolish	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: wise
meaningful	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: meaningless
enjoyable	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: unenjoyable
ugly	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: beautiful
right	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: wrong
productive	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: destructive

2. Development of the Personal Noise Filter involves a variety of new technologies, and it is difficult to anticipate how much it will cost to produce each unit. In this survey, we therefore are trying to assess how much money people like you would be willing to pay for a product of this kind.

In the space below, please enter the greatest amount of money you would be willing to pay for the Personal Noise Filter.

I personally would be willing to pay a maximum of $_____ to buy the Personal Noise Filter.

If you should be unwilling to pay any amount of money for the Personal Noise Filter, please briefly explain your reasons.

_____

_____

_____

_____

3. Please answer the following questions by circling the appropriate number on each scale.

For me to buy a Personal Noise Filter would be

easy : 1 : 2 : 3 : 4 : 5 : 6 : 7 : difficult

Most people who are important to me would approve/disapprove of my buying a Personal Noise Filter

approve : 1 : 2 : 3 : 4 : 5 : 6 : 7 : disapprove

For me to buy a Personal Noise Filter would be

good : 1 : 2 : 3 : 4 : 5 : 6 : 7 : bad

How likely is it that you would buy a Personal Noise Filter?

likely : 1 : 2 : 3 : 4 : 5 : 6 : 7 : unlikely

I believe that I could afford to buy a Personal Noise Filter

true : 1 : 2 : 3 : 4 : 5 : 6 : 7 : false

Most people who are important to me think that I should buy a Personal Noise Filter

likely : 1 : 2 : 3 : 4 : 5 : 6 : 7 : unlikely

For me to buy a Personal Noise Filter would be

harmful : 1 : 2 : 3 : 4 : 5 : 6 : 7 : beneficial

All things considered, would you be willing to buy a Personal Noise Filter?

I would : 1 : 2 : 3 : 4 : 5 : 6 : 7 : I would not

4. At this stage of the development of the Personal Noise Filter, it is difficult to determine the retail price at which the product will be offered for sale. Based on anticipated costs of production and marketing, DigiSys estimates that the Personal Noise Filter will be offered at a list price of about $20.00.

In the questions below, you are asked to indicate whether you personally would be willing to pay $20.00 for the Personal Noise Filter.

(4a) Would you be willing to pay $20.00 for the Personal Noise Filter? (check one)

_____ yes (Please go to # 4b)

_____ no (Please go to # 4c)

(4b) What is the maximum price you would be willing to pay?

$_____

(4c) How much would you be willing to pay for the Personal Noise Filter?

$_____

We now turn to a second and very different topic, the proposal to construct a **Campus Movie Theater**. As you may know, the Administration of the Amherst campus is considering a plan to erect a new building that would house a proposed movie theater. No final decision has yet been made, but discussion of the project has been going on for some time. Occupation of the proposed building would be possible as early as September 1994, about 18 months from today.

An article describing the proposed project recently appeared in *The Campus Chronicle*. The article is reproduced on the next page. Please read it carefully.

(Reprinted from *The Campus Chronicle,* November 5, 1992)

strong argument / relevant

Campus movie theater proposed for 1994

William Reinet, Spokesperson for the Chancellor's Office, today revealed details of a proposed Campus Movie Theater. The theater is to be housed in a new building on the Amherst campus. If all goes according to plan, the theater will be ready for use in about 18 months – September 1994.

In a discussion with faculty, staff, and student representatives, Reinet explained the need for the proposed movie theater. "The theater is mainly intended to serve the needs of students on the Amherst campus. Existing facilities are really not adequate for this purpose. In past years, we have used lecture halls and meeting rooms in various buildings on campus that were not designed as movie theaters. Few of these places have built-in projection facilities, the screens are small, the lighting cannot be easily controlled, and the sound quality is very poor. In addition, we currently have virtually no facilities for the projection of high quality video movies."

Reinet went on to say that even the existing inadequate facilities are often unavailable because they are used for other purposes. A modern university, he argued, cannot give students adequate exposure to the visual medium without a dedicated movie theater. Because of the communications revolution, we must assign a high priority to construction of the movie theater.

In response to questions, Reinet emphasized that the proposed movie theater would not duplicate the services provided by commercial movie houses in the area. It would screen only high quality movies that are rarely shown in the area movie theaters. Avant garde movies produced by small companies, or in Europe, rather than the big-budget Hollywood fare. At the present time, Reinet explained, our students have too few opportunities to see movies of this kind.

Moreover, priority is to be given to the screening of movies and videos produced by students on the Amherst campus, and by students in the other area colleges. Construction of the Campus Movie Theater would thus greatly enhance the educational opportunities of students at UMass.

To encourage student participation, admission to the theater is to be free for all five-college students.--DH

Weak argument / relevant

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In a discussion with faculty, staff, and student representatives, Reinet explained the need for the proposed movie theater. "The theater is intended to serve the needs of all people in Amherst and the surrounding communities. There are of course many movie theaters in the area, but we think it would be nice to have a facility right on campus. In past years, we have used lecture halls and meeting rooms in various buildings on campus, a practice that some have found objectionable. Many students and faculty don't like to watch movies in the same locations in which lectures or meetings take place. The proposed movie theater will enable us to separate work-related activities from leisure time."

Reinet went on to say that screening all movies in a central facility would make it easier for people, especially those coming from off campus, to locate the theater. At the present time, it is not unusual for people to spend 5 or 10 minutes looking for the right building, or having to ask for directions.

In response to questions, Reinet stated that the proposed movie theater could compete with commercial movie houses in the area. It would screen popular movies in a well-equipped facility with comfortable seats, as in commercial movie theaters. With a smile, Reinet explained that our students, faculty, and staff deserve a bit of luxury.

On a more serious note, Reinet concluded by saying that motion pictures are part of contemporary entertainment and that students would benefit from watching movies on campus in a facility designed for this purpose. Construction of the Campus Movie Theater would thus offer new entertainment opportunities to students at UMass.

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Strong argument / irrelevant

Campus movie theater proposed for 1997

William Reinet, Spokesperson for the Chancellor's Office, today revealed details of a proposed Campus Movie Theater. The theater is to be housed in a new building on the Amherst campus. If all goes according to plan, the theater will be ready for use in about 4½ years – September 1997.

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1. Please rate the proposed construction of a movie theater on the UMass-Amherst campus. Circle a number on each of the following scales, as it best describes your opinion.

Constructing a Campus Movie Theater is

desirable : 1 : 2 : 3 : 4 : 5 : 6 : 7 : undesirable

boring : 1 : 2 : 3 : 4 : 5 : 6 : 7 : interesting

selfish : 1 : 2 : 3 : 4 : 5 : 6 : 7 : unselfish

happy : 1 : 2 : 3 : 4 : 5 : 6 : 7 : sad

unpleasant : 1 : 2 : 3 : 4 : 5 : 6 : 7 : pleasant

serious : 1 : 2 : 3 : 4 : 5 : 6 : 7 : humorous

strong : 1 : 2 : 3 : 4 : 5 : 6 : 7 : weak

good : 1 : 2 : 3 : 4 : 5 : 6 : 7 : bad

pessimistic : 1 : 2 : 3 : 4 : 5 : 6 : 7 : optimistic

important : 1 : 2 : 3 : 4 : 5 : 6 : 7 : unimportant

active : 1 : 2 : 3 : 4 : 5 : 6 : 7 : passive

harmful : 1 : 2 : 3 : 4 : 5 : 6 : 7 : beneficial

attractive : 1 : 2 : 3 : 4 : 5 : 6 : 7 : unattractive

useful : 1 : 2 : 3 : 4 : 5 : 6 : 7 : useless

foolish : 1 : 2 : 3 : 4 : 5 : 6 : 7 : wise

meaningful : 1 : 2 : 3 : 4 : 5 : 6 : 7 : meaningless

enjoyable : 1 : 2 : 3 : 4 : 5 : 6 : 7 : unenjoyable

ugly : 1 : 2 : 3 : 4 : 5 : 6 : 7 : beautiful

right : 1 : 2 : 3 : 4 : 5 : 6 : 7 : wrong

productive : 1 : 2 : 3 : 4 : 5 : 6 : 7 : destructive

2. Construction of the Campus Movie Theater would be quite expensive. Because of the State's financial difficulties, only a small part of the expense could be covered by State funds. Most of the money would have to be raised by selling bonds, and these bonds would have to be repaid from student fees over a 30-year period. One option under consideration is to institute a new voluntary student fee, to begin in the **Fall semester of 1993**. As with the Mass PIRG fee, students could check a box if they did not want to pay the indicated fee for the movie theater.

A major purpose of this survey is to assess how much money, in the form of a voluntary fee, students on the Amherst campus would be willing to pay for construction of the proposed movie theater. In the space below, please enter the greatest amount of money you would be willing to pay each semester before you would check the box to indicate that you do not want to pay the movie theater fee.

I personally would be willing to pay a maximum of $_____ per semester in additional student fees to help finance construction of the Campus Movie Theater.

If you should be opposed to paying any amount to help pay for construction of the Campus Movie Theater, please briefly explain your reasons:

_____

_____

_____

_____

3. Please answer the following questions by circling the appropriate number on each scale.

For me to pay an additional student fee to help finance construction of the Campus Movie Theater would be

easy : 1 : 2 : 3 : 4 : 5 : 6 : 7 : difficult

Most people who are important to me would approve/disapprove of my paying an additional student fee to help finance construction of the Campus Movie Theater

approve : 1 : 2 : 3 : 4 : 5 : 6 : 7 : disapprove

For me to pay an additional student fee to help finance construction of the Campus Movie Theater would be

good : 1 : 2 : 3 : 4 : 5 : 6 : 7 : bad

How likely is it that you would pay an additional student fee to help finance construction of the Campus Movie Theater?

likely : 1 : 2 : 3 : 4 : 5 : 6 : 7 : unlikely

I believe that I could afford to pay an additional student fee to help finance construction of the Campus Movie Theater

true : 1 : 2 : 3 : 4 : 5 : 6 : 7 : false

Most people who are important to me think that I should pay an additional student fee to help finance construction of the Campus Movie Theater

likely : 1 : 2 : 3 : 4 : 5 : 6 : 7 : unlikely

For me to pay an additional student fee to help finance construction of the Campus Movie Theater would be

harmful : 1 : 2 : 3 : 4 : 5 : 6 : 7 : beneficial

All things considered, would you be willing to pay an additional student fee to help finance construction of the Campus Movie Theater?

I would : 1 : 2 : 3 : 4 : 5 : 6 : 7 : I would not

4. As an alternative to the voluntary fee, a second option under consideration is to impose a compulsory fee on all students to help pay for the proposed Campus Movie Theater. Although the exact cost of construction is not known at the present time, the best estimate we have is that the total cost would be about 2.5 million dollars. To pay for the loans in this amount, student fees would have to be raised by about $15.00 per semester, beginning in the **Fall semester of 1993**.

In the following questions you are asked to indicate whether you personally would be willing to pay this amount in additional student fees.

(4a) Would you be willing to pay $15.00 per semester in additional student fees to help finance construction of the Campus Movie Theater? (check one)

_____ yes (Please go to # 4b)

_____ no (Please go to # 4c)

(4b) What is the maximum increase in student fees per semester you would be willing pay?

$_____

(4c) How much would you be willing to pay in additional student fees per semester to help finance construction of the Campus Movie Theater?

$_____

Before concluding, we need a few items of personal information.

(a) Your age: _____

(b) Your sex: _____ male _____ female

(c) Year in college: _____ Freshman _____ Sophomore _____ Junior _____ Senior

(c) How much money did you personally earn last semester? $_____

(d) Who pays your tuition and fees at UMass? (check one)

_____ I pay all tuition and fees myself (from savings, earnings, or loans)

_____ I pay most tuition and fees myself

_____ My parents or others pay most tuition and fees

_____ My parents or others pay all tuition and fees

(e) Who pays for your living expenses while you are at college? (check one)

_____ I pay all my living expenses myself

_____ I pay most of my living expenses myself

_____ My parents or others pay most of my living expenses

_____ My parents or others pay all of my living expenses

(f) Do you own a car?

_____ Yes _____ No

(g) Approximately how much money do you spend on entertainment each semester?

I spend about $_____ on entertainment each semester